REMARKS

Applicant would like to thank the Examiner for withdrawing her objection to the addition of paragraphs [0074.1]-[0074.18] to the specification and her objection to the incorporation by reference of the Ausubel et al. reference. Applicant would also like to thank the Examiner for agreeing that the amendment and arguments submitted in the RCE submission have overcome the following rejections: rejection of claims 22-29 and 31-38 under 35 U.S.C. §102(e) as anticipated by Van Ness et al.; rejection of claims 22-29 and 31-38 under 35 U.S.C. 103(a) over Kaneoka et al. and Van Ness et al.; rejection of claim 30 under 35 U.S.C. § 103(a) over Kaneoka et al. and Van Ness et al. and in further view of Nolan et al.; rejection of claims 22-29 and 31-39 under 35 U.S.C. § 103(a) over Armstrong et al. and Van Ness et al.; and rejection of claim 31 under 35 U.S.C. § 103(a) over Kaneoka et al. and Van Ness et al. and further in view of Long.

In the current Office Action, the Examiner has rejected all of the pending claims under new grounds of rejection based on 35 U.S.C. § 112 and 35 U.S.C. § 103(a). Claims 22-39 remain pending in the application. Claim 22 has been amended to include the phrase "to provide perfect sequence homology between the complementary regions of the oligonucleotide and the contiguous sequence of the target oligonucleotide." Support for this amendment can be found in paragraphs [0068]-[0069] of the specification as originally filed.

In view of the claim amendment and the following remarks, applicant respectfully requests reconsideration of the claims and submits that the application is in condition for allowance.

I. Claim Priority

The Office Action states that the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. § 112 for claims 22-39 of this application. Applicant acknowledges the Examiner's statement regarding priority and accepts the priority date of August 30, 2001, for claims 22-39 of the application. However, applicant reminds the Examiner that if the present claims are amended, the priority date of August 30, 2000, the filing date of the provisional application, may be applicable.

II. Claim Interpretation

Applicant agrees with the Examiner's interpretation of the limitation "bead set." However, applicant would like to point out that in the Examiner's interpretation, individual beads in a bead set may also be bound to oligonucleotides with variant sequences.

Once again, applicant disagrees with the Examiner's statement that random bases may include "any bases." Using the Examiner's definition would render the claimed methods inoperable. As used in the invention, the random bases of the spacer may include all bases except those bases that are complementary to the target oligonucleotide 5' or 3' of where the oligonucleotide hybridizes with the target oligonucleotide. Thus, the random bases of the spacer may include all bases so long as the claimed methods can be effectively performed. Furthermore, the use of random bases as all bases except those that are complementary can be supported by the dictionary definition of random, which states that random means "lacking a definite plan, purpose or pattern." MERRIAM WEBSTER'S COLLEGIATE DICTIONARY 966-967 (Tenth Ed. 1997)(copy enclosed).

Applicant agrees with the Examiner's definition of the limitation of claim 32, which reads "fluorescence color ratio incorporated into one or more beads of the bead sets" to mean "fluorescent beads possessing fluorescence dyes with emission spectra at two different wavelengths, which allow measurement of fluorescence ratios for each of the beads."

III. Claim Rejections

A. 35 U.S.C. § 112

The Examiner rejected claims 22-39 as amended under 35 U.S.C. § 112 as failing to comply with the written description requirement. The Office Action states that the claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. Specifically, the Office Action states that the limitation "wherein complementary regions of the oligonucleotides flank the spacer, further wherein the complementary regions of the oligonucleotides hybridize with a contiguous sequence on the target oligonucleotide" is not supported by the disclosure of the instant application. Applicant respectfully traverses.

That complementary regions of the oligonucleotides flank the spacer and hybridize with a contiguous sequence on the target oligonucleotide is an inherent feature of the oligonucleotides of the present invention. This can be demonstrated by the use of "middle" in the description of the oligonucleotide probes. Specification, paragraph [0069]. As set forth in the definition in the dictionary, "middle" means "being at neither extreme." MERRIAM WEBSTER'S COLLEGIATE DICTIONARY 736 (Tenth Ed. 1997)(copy enclosed). Thus, by using the term middle, it is inherent that the spacer cannot be at either end of the oligonucleotide because the spacer can be at neither extreme.

The oligonucleotide binding to a contiguous sequence on the target oligonucleotide is also an inherent feature of the oligonucleotide probes of the present invention. This is because the "template that hybridized to the oligo coupled beads was selected to provide perfect sequence homology." Specification, paragraph [0068], emphasis added. As the bases in the spacer are random and cannot be homologous to the template, by definition, if the oligonucleotide bases flanking the spacer do not bind to a contiguous sequence on the target, there will be a mismatch and the perfect sequence homology will be destroyed.

As stated in MPEP § 2163.07(a), "by disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, even though it says nothing explicit concerning it." In order to establish inherency, "the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference and that it would be so recognized by persons of ordinary skill." MPEP § 2163.07(a). Relying on the arguments laid out above, applicant believes it has satisfied that the claim amendments rejected by the Examiner are inherent in the invention. Applicant would be happy to amend the specification (as allowed in MPEP § 2163.07(a)) if the Examiner believes this is warranted. Because the claim amendments filed with the RCE and the current claim amendment are proper and supported by the application as filed, applicant respectfully requests that the Examiner withdraw the 35 U.S.C. § 112 rejection.

B. 35 U.S.C § 103

a. Claims 22-31, 33-37 and 39

The Examiner rejected claims 22-31, 33-37 and 39 as unpatentably obvious over Armstrong et al., Van Ness et al., and Lee et al. As stated in the MPEP, to establish a prima facie case of obviousness, "[f]irst, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teaching. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143. Applicant respectfully submits that the Examiner has failed to make out a prima facie case because the Examiner has failed to show that there is some suggestion or motivation to combine reference teaching of the cited references.

The Office Action states that "it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to have used the oligonucleotides with the spacers of Lee et al. in the method of allele detection of Armstrong et al. and Van Ness et al. because "the primers of Lee et al. add extra selectivity to the sequence specific primer method." Contrary to the assertion in the Office Action, the passage cited by the Examiner fails to provide a motivation to combine the primers of Lee et al. with the methods of Armstrong et al.

The cited passage refers to adding extra selectivity to the sequence specific primer method (SSP). In SSP, the primers of the invention must be able to both hybridize and participate in elongation reactions. The advantages to the primers of Lee et al. as stated in the Lee et al. application and the Office Action include "the number of separate PCR reactions required for assigning an unknown allele may be reduced which reduces the cost of PCR-SSP testing." In contrast, the method of Armstrong et al. is purely based upon hybridization of the probe to a target sequence without production of an extension product in a PCR reaction. The hybridization probes of Armstrong et al. are never used as primers in the polymerase chain reaction. Thus, Lee et al. and Armstrong et al. refer to different types of technology. The skilled artisan would not take the primers of Lee et al. and apply them to the methods of Armstrong et al. because the primers of Lee et al. solve a problem not found in Armstrong et al., namely they add selectivity as primers during a polymerase chain reaction. Therefore, there is no motivation to combine the primers of Lee et al. with the methods of Armstrong et al.

Similarly, the passage cited by the Examiner does not provide a teaching or suggestion that the Lee et al. and Van Ness et al. references should be combined. As stated above, the primers in Lee et al. provide advantages when used in SSP. In contrast, Van Ness et al. only use probes that anneal to target sequences, not primers that can be elongated and used with the polymerase chain reaction. Further, using the primers of Lee et al. with the compositions and methods of Van Ness et al. would change the principal of operation of the Van Ness et al. reference. As stated in the MPEP, "if proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." MPEP § 2143.01

The invention in Van Ness et al. centers around methods to increase the specificity of hybridization of nucleic acids by using oligonucleotides with spacers, where the spacer cannot enter into hydrogen bonding with other bases. Van Ness et al. col. 11, line 49; col. 12, line 35; col. 13, line 20; col. 21, line 7; col. 21, line 21; col. 39, line 21 – col. 43, line 57. As the skilled artisan understands, the oligonucleotides of Lee et al. contain spacers made from natural oligonucleotides capable of hydrogen bonding. Thus, using the primers of Lee et al. with Van Ness et al. would destroy the principle of operation of Van Ness et al. to increase the specificity of hybridization by using oligonucleotides with spacers, where the spacers are not capable of hydrogen bonding.

Based on the arguments above, applicant respectfully submits that there is no suggestion within the references cited or in the Office Action to combine the references of Lee et al., Van Ness et al., and Armstrong et al. Thus, applicant respectfully submits that a prima facie case of obviousness has not been established and requests the Examiner withdraw the rejection and allow the claims to issue.

b. Claims 32 and 38

In the Office Action, claims 32 and 38 were rejected as obvious over Armstrong et al., Van Ness et al., and Lee et al. in further view of Fulton et al. Applicant respectfully traverses. As set forth above, there is no motivation to combine the Lee et al. and Armstrong et al. references. Further, combining the Lee et al. and Van Ness et al. references would destroy the principle of operation of the Van Ness, et al. invention. Even with the disclosure of the Fulton et

al. reference, without combining the Lee et al., Armstrong et al. and Van Ness et al. references, the Office Action has failed to provide a combination that teaches each and every limitation of the rejected claims. In light of the lack of establishment of a prima facie case of obviousness, applicant respectfully requests the Examiner withdraw the 35 U.S.C. § 103(a) rejection to claims 32 and 38 and allow the claims to issue.

CONCLUSION

In view of the above remarks, it is respectfully submitted that this application is in condition for allowance and early notice to that effect is earnestly solicited. The Examiner is invited to telephone the undersigned at the number listed below if the Examiner believes such would be helpful in advancing the application to issue.

Respectfully submitted,

Date December 28, 2004 By Kathryn E. Cox

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mi-cro-pro-ces-sor \ˌmī-krō-ˈprä-ˌse-sər, -ˈprō-\ *n* (1970) : a computer processor contained on an integrated-circuit chip; *also* : such a processor with memory and associated circuits
mi-cro-pro-gram \-ˈprō-ˌgram, -grəm\ *n* (1953) : a routine composed of microinstructions used in microprogramming
mi-cro-pro-gram-ming \-ˌgra-miŋ\ *n* (1953) : the use of routines stored in memory rather than specialized circuits to control a device (as a computer)
mi-cro-pro-jec-tor \-prə-ˈjek-tər\ *n* (1927) : a projector utilizing a compound microscope for projecting on a screen a greatly enlarged image of a microscopic object — **mi-cro-pro-jec-tion** \-ˈjek-shən\ *n*
mi-cro-pub-lish-ing \-ˈpə-bli-shiŋ\ *n* (1966) : publishing in microform — **mi-cro-pub-lish-er** \-bli-shər\ *n*
mi-cro-pul-sa-tion \-ˌpəl-ˈsā-shən\ *n* (1949) : a pulsation having a short period ⟨a ~ of the earth's magnetic field with a period in the range from a fraction of a second to several hundred seconds⟩
mi-cro-punc-ture \-ˈpəŋ(k)-chər\ *n* (1948) : an extremely small puncture (as of a nephron); *also* : an act of making a micropuncture
mi-cro-pyle \ˈmī-krə-ˌpīl\ *n* [F, fr. *micr-* + Gk *pylē* gate] (1821) **1** : a minute opening in the integument of an ovule of a seed plant **2** : a differentiated area of surface in an egg through which a sperm enters — **mi-cro-py-lar** \ˌmī-krə-ˈpī-lər\ *adj*
mi-cro-quake \ˈmī-krō-ˌkwāk\ *n* (1967) : MICROEARTHQUAKE
mi-cro-ra-di-og-ra-phy \ˌmī-krō-ˌrā-dē-ˈä-grə-fē\ *n* (1913) : radiography in which an X-ray photograph is prepared showing minute internal structure — **mi-cro-ra-dio-graph** \-ˈrā-dē-ə-ˌgraf\ *n* — **mi-cro-ra-dio-graph-ic** \-ˌrā-dē-ə-ˈgra-fik\ *adj*
mi-cro-read-er \ˈmī-krō-ˌrē-dər\ *n* (1949) : an apparatus that gives an enlarged image of a microphotograph esp. for reading
mi-cro-re-pro-duc-tion \ˌmī-krō-ˌrē-prə-ˈdək-shən\ *n* (1938) : the reproduction of written or printed matter in microform; *also* : an item so reproduced
mi-cro-scale \ˈmī-krō-ˌskāl\ *n* (1931) : a very small scale
mi-cro-scope \ˈmī-krə-ˌskōp\ *n* [NL *microscopium*, fr. *micr-* + *-scopium* -scope] (1654) **1** : an optical instrument consisting of a lens or combination of lenses for making enlarged images of minute objects; *esp* : COMPOUND MICROSCOPE **2** : an instrument using radiations other than light or using vibrations for making enlarged images of minute objects ⟨acoustic ~⟩
mi-cro-scop-ic \ˌmī-krə-ˈskä-pik\ *or* **mi-cro-scop-i-cal** \-pi-kəl\ *adj* (1732) **1** : resembling a microscope esp. in perception **2** **a** : invisible or indistinguishable without the use of a microscope **b** : very small or fine or precise **3** : of, relating to, or conducted with the microscope or microscopy — **mi-cro-scop-i-cal-ly** \-pi-k(ə-)lē\ *adv*
mi-cros-co-py \mī-ˈkräs-kə-pē\ *n* (ca. 1665) : the use of or investigation with the microscope — **mi-cros-co-pist** \-pist\ *n*
mi-cro-sec-ond \ˈmī-krō-ˌse-kənd, -kənt\ *n* [ISV] (1906) : one millionth of a second
mi-cro-seism \ˈmī-krə-ˌsī-zəm\ *n* [ISV *micr-* + Gk *seismos* earthquake — more at SEISMIC] (1887) : a feeble rhythmically and persistently recurring earth tremor — **mi-cro-seis-mic** \ˌmī-krə-ˈsīz-mik, -ˈsīs-\ *adj* — **mi-cro-seis-mic-i-ty** \-sīz-ˈmi-sə-tē, -sīs-\ *n*
mi-cro-some \ˈmī-krə-ˌsōm\ *n* [G *Mikrosom*, fr. *mikr-* micr- + *-som* -some] (1885) **1** : any of various minute cellular structures (as a ribosome) **2** : a particle in a particulate fraction that is obtained by heavy centrifugation of broken cells and consists of various amounts of ribosomes, fragmented endoplasmic reticulum, and mitochondrial cristae — **mi-cro-som-al** \ˌmī-krə-ˈsō-məl\ *adj*
mi-cro-spec-tro-pho-tom-e-ter \ˌmī-krə-ˌspek-trə-fō-ˈtä-mə-tər\ *n* (1949) : a spectrophotometer adapted to the examination of light transmitted by a very small specimen (as a single organic cell) — **mi-cro-spec-tro-pho-to-met-ric** \-ˌfō-tə-ˈme-trik\ *adj* — **mi-cro-spec-tro-pho-tom-e-try** \-fō-ˈtä-mə-trē\ *n*
mi-cro-sphere \ˈmī-krə-ˌsfir\ *n* (1894) : a minute sphere — **mi-cro-spher-i-cal** \ˌmī-krə-ˈsfir-i-kəl, -ˈsfer-\ *adj*
mi-cro-spo-ran-gi-um \ˌmī-krō-spə-ˈran-jē-əm\ *n* [NL] (1881) : a sporangium that develops only microspores — **mi-cro-spo-ran-gi-ate** \-jē-ət\ *adj*
mi-cro-spore \ˈmī-krə-ˌspōr, -ˌspȯr\ *n* [ISV] (1858) : any of the spores in heterosporous plants that give rise to male gametophytes and are generally smaller than the megaspore — **mi-cro-spo-rous** \ˌmī-krə-ˈspōr-əs, -ˈspȯr-; mī-ˈkräs-pə-rəs\ *adj*
mi-cro-spo-ro-cyte \-ˈspōr-ə-ˌsīt, -ˈspȯr-\ *n* (1940) : a microspore mother cell
mi-cro-spo-ro-gen-e-sis \ˌmī-krə-ˌspōr-ə-ˈje-nə-səs, -ˌspȯr-\ *n* [NL] (1921) : the formation and maturation of microspores
mi-cro-spo-ro-phyll \-ˌfil\ *n* (ca. 1890) : a sporophyll that develops only microsporangia
mi-cro-state \ˈmī-krō-ˌstāt\ *n* (1962) : a nation that is extremely small in area and population
mi-cro-struc-ture \ˈmī-krō-ˌstrək-chər\ *n* [ISV] (1885) : the microscopic structure of a material (as a mineral or a biological cell) — **mi-cro-struc-tur-al** \ˌmī-krō-ˈstrək-chə-rəl, -ˈstrək-shrəl\ *adj*
mi-cro-sur-gery \ˌmī-krō-ˈsərj-rē, -ˈsər-jə-\ *n* (1926) : minute dissection or manipulation (as by a micromanipulator or laser beam) of living structures or tissue — **mi-cro-sur-gi-cal** \-ˈsər-ji-kəl\ *adj*
mi-cro-switch \-ˌswich\ *n* (1940) : a very small switch that is sensitive to minute motions and is used esp. in automatic devices
mi-cro-tech-nique \ˌmī-krō-tek-ˈnēk\ *also* **mi-cro-tech-nic** \-ˈtek-nik, -tek-ˈnēk\ *n* [ISV] (1892) : any of various methods of handling and preparing material for microscopic observation and study
mi-cro-tome \ˈmī-krə-ˌtōm\ *n* [ISV] (1856) : an instrument for cutting sections (as of organic tissues) for microscopic examination
mi-cro-tone \ˈmī-krə-ˌtōn\ *n* (1920) : a musical interval smaller than a halftone — **mi-cro-to-nal** \ˌmī-krə-ˈtō-nᵊl\ *adj* — **mi-cro-to-nal-i-ty** \-tō-ˈna-lə-tē\ *n* — **mi-cro-ton-al-ly** \-ˈtō-nᵊl-ē\ *adv*
mi-cro-tu-bule \ˌmī-krō-ˈtü-(ˌ)byül(g)l, -ˈtyü-\ *n* (1961) : any of the minute tubules in eukaryotic cytoplasm that are composed of the protein tubulin and form an important component of the cytoskeleton, mitotic spindle, cilia, and flagella — **mi-cro-tu-bu-lar** \-byə-lər\ *adj*
mi-cro-vas-cu-lar \-ˈvas-kyə-lər\ *adj* (1959) : of, relating to, or constituting the part of the circulatory system made up of minute vessels (as venules or capillaries) that average less than 0.3 millimeters in diameter — **mi-cro-vas-cu-la-ture** \-lə-ˌchůr, -ˌtyůr, -ˌtůr\ *n*
mi-cro-vil-lus \-ˈvi-ləs\ *n* [NL] (1953) : a microscopic projection of a tissue, cell, or cell organelle; *esp* : any of the fingerlike outward projections of some cell surfaces — **mi-cro-vil-lar** \-ˈvi-lər\ *adj* — **mi-cro-vil-lous** \-ˈvi-ləs\ *adj*
mi-cro-volt \ˈmī-krə-ˌvōlt\ *n* (1868) : one millionth of a volt
mi-cro-watt \-ˌwät\ *n* (ca. 1909) : one millionth of a watt
¹mi-cro-wave \-ˌwāv\ *n, often attrib* (1931) **1** : a comparatively short electromagnetic wave; *esp* : one between about 1 millimeter and 1 meter in wavelength **2** : MICROWAVE OVEN
²microwave *vt* (1973) : to cook or heat in a microwave oven — **mi-cro-wav-able** *or* **mi-cro-wave-able** \ˌmi-krə-ˈwā-və-bəl\ *adj*
microwave oven *n* (1963) : an oven in which food is cooked by the heat produced by the absorption of microwave energy by water molecules in the food
mi-cro-world \-ˌwər(-ə)ld\ *n* (1955) : a small universe; *specif* : the natural universe observed at the microscopic or submicroscopic level
mic-tu-rate \ˈmik-chə-ˌrāt, ˈmik-tə-\ *vi* **-rat-ed; -rat-ing** [L *micturire*, to desire to urinate, fr. *meiere* to urinate; akin to OE *migan* to urinate, Gk *omeichein*] (1842) : URINATE — **mic-tu-ri-tion** \ˌmik-chə-ˈri-shən, ˌmik-tə-\ *n*
¹mid \ˈmid\ *adj* [ME, fr. OE *midde*; akin to OHG *mitti* middle, L *medius*, Gk *mesos*] (bef. 12c) **1** : being the part in the middle or midst ⟨in ~ ocean⟩ — often used in combination ⟨*mid*-August⟩ **2** : occupying a middle position ⟨the ~ finger⟩ **3** *of a vowel* : articulated with the arch of the tongue midway between its highest and its lowest elevation — **mid** *adv*
²mid *prep* (1808) : AMID
mid-air \ˈmid-ˈar, -ˈer\ *n* (1667) : a point or region in the air not immediately adjacent to the ground ⟨planes collided in ~⟩
Mi-das \ˈmī-dəs\ *n* [L, fr. Gk] : a legendary Phrygian king who is given the power of turning everything he touches to gold
Midas touch *n* (1883) : an uncanny ability for making money in every venture
mid-brain \ˈmid-ˌbrān\ *n* (1875) : the middle of the three primary divisions of the developing vertebrate brain or the corresponding part of the adult brain — called also *mesencephalon*; see BRAIN illustration
mid-course \-ˈkōrs, -ˈkȯrs\ *adj* (ca. 1956) : being or occurring in the middle part of a course (as of a spacecraft) ⟨a ~ correction⟩
mid-day \ˈmid-ˌdā, -ˈdā\ *n, often attrib* (bef. 12c) : the middle of the day
mid-den \ˈmi-dᵊn\ *n* [ME *midding*, of Scand origin; akin to ON *myki* dung & ON *dyngja* manure pile — more at DUNG] (14c) **1** : DUNGHILL **2** **a** : a refuse heap; *esp* : KITCHEN MIDDEN **b** : a small pile (as of seeds, bones, or leaves) gathered by a rodent (as a pack rat)
¹mid-dle \ˈmi-dᵊl\ *adj* [ME *middel*, fr. OE; akin to OE *midde*] (bef. 12c) **1** : equally distant from the extremes : MEDIAL, CENTRAL ⟨the ~ house in the row⟩ **2** : being at neither extreme : INTERMEDIATE **3** *cap* **a** : constituting a division intermediate between those prior and later or upper and lower ⟨*Middle* Paleozoic⟩ **b** : constituting a period of a language or literature intermediate between one called *Old* and one called *New* or *Modern* ⟨*Middle* Dutch⟩ **4** *of a verb form or voice* : typically asserting that a person or thing both performs and is affected by the action represented
²middle *n* (bef. 12c) **1** : a middle part, point, or position **2** : the central portion of the human body : WAIST **3** : the position of being among or in the midst of something **4** : something intermediate between extremes : MEAN **5** : the center of an offensive or defensive formation; *esp* : the area between the second baseman and the shortstop
middle age *n* (14c) : the period of life from about 40 to about 60
mid-dle-aged \ˌmi-dᵊl-ˈājd\ *adj* — **mid-dle-ag-er** \-ˈā-jər\ *n*
Middle Ages *n pl* (1616) : the period of European history from about A.D. 500 to about 1500
Middle America *n* (1898) **1** : the region of the western hemisphere including Mexico, Central America, often the West Indies, and sometimes Colombia and Venezuela **2** : the midwestern section of the U.S. **3** : the middle-class segment of the U.S. population; *esp* : the traditional or conservative element of the middle class — **middle-American** *adj* — **Middle American** *n*
mid-dle-brow \ˈmi-dᵊl-ˌbraů\ *n* (1925) : a person who is moderately but not highly cultivated — **middlebrow** *adj*
middle C *n* (1840) : the note designated by the first ledger line below the treble staff and the first above the bass staff
mid-dle-class \ˌmi-dᵊl-ˈklas\ *adj* (1836) : of or relating to the middle class; *esp* : characterized by a high material standard of living, sexual morality, and respect for property — **mid-dle-class-ness** \-nəs\ *n*
middle class *n* (1766) : a class occupying a position between the upper class and the lower class; *esp* : a fluid heterogeneous socioeconomic grouping composed principally of business and professional people, bureaucrats, and some farmers and skilled workers sharing common social characteristics and values
middle distance *n* (1813) **1** : a part of a pictorial representation or scene between the foreground and the background **2** : any footrace distance usu. from 800 to 1500 meters or from 880 yards to one mile
Middle Dutch *n* (ca. 1959) : the Dutch language in use from about 1100 to about 1500 — see INDO-EUROPEAN LANGUAGES table
middle ear *n* (1852) : a small membrane-lined cavity that is separated from the outer ear by the eardrum and that transmits sound waves from the eardrum to the partition between the middle and inner ears through a chain of tiny bones
Middle English *n* (1830) : the English in use from the 12th to 15th centuries — see INDO-EUROPEAN LANGUAGES table
middle finger *n* (bef. 12c) : the midmost of the five digits of the hand
Middle French *n* (1889) : the French in use from the 14th to 16th centuries — see INDO-EUROPEAN LANGUAGES table
middle game *n* (1894) : the middle phase of a board game; *specif* : the part of a chess game after the pieces have been developed when players attempt to gain and exploit positional and material superiority — compare ENDGAME, OPENING
Middle Greek *n* (1889) : the Greek language used in the 7th to 15th centuries
middle ground *n* (1801) **1** : a standpoint midway between extremes **2** : MIDDLE DISTANCE 1
Middle High German *n* (1889) : the High German in use from about 1100 to 1500 — see INDO-EUROPEAN LANGUAGES table

RUN] (1561) : a haphazard course — **at random** : without definite aim, direction, rule, or method

[2]**random** *adj* (1565) 1 a : lacking a definite plan, purpose, or pattern b : made, done, or chosen at random ⟨read ~ passages from the book⟩ 2 a : relating to, having, or being elements or events with definite probability of occurrence ⟨~ processes⟩ b : being or relating to a set or to an element of a set each of whose elements has equal probability of occurrence ⟨a ~ sample⟩; *also* : characterized by procedures designed to obtain such sets or elements ⟨~ sampling⟩ — **ran·dom·ly** *adv* — **ran·dom·ness** *n*

syn RANDOM, HAPHAZARD, CASUAL mean determined by accident rather than design. RANDOM stresses lack of definite aim, fixed goal, or regular procedure ⟨a *random* selection of books⟩. HAPHAZARD applies to what is done without regard for regularity or fitness or ultimate consequence ⟨a *haphazard* collection of rocks⟩. CASUAL suggests working or acting without deliberation, intention, or purpose ⟨a *casual* collector⟩.

[3]**random** *adv* (1618) : in a random manner

random–access *adj* (1953) : permitting access to stored data in any order the user desires

random–access memory *n* (1955) : a computer memory that provides the main internal storage available to the user for programs and data — called also *RAM;* compare READ-ONLY MEMORY

ran·dom·ize \'ran-də-,mīz\ *vt* **-ized; -iz·ing** (1926) : to select, assign, or arrange in a random way — **ran·dom·i·za·tion** \,ran-də-mə-'zā-shən\ *n* — **ran·dom·iz·er** *n*

randomized block *n* (ca. 1942) : an experimental design (as in horticulture) in which different treatments are distributed in random order in a block or plot — called also *randomized block design*

random variable *n* (1949) : a variable that is itself a function of the result of a statistical experiment in which each outcome has a definite probability of occurrence — called also *variate*

random walk *n* (1941) : a process (as Brownian motion or genetic drift) consisting of a sequence of steps (as movements or changes in gene frequency) each of whose characteristics (as magnitude and direction) is determined by chance

[1]**randy** \'ran-dē\ *adj* [prob. fr. obs. *rand* to rant] (1698) 1 *chiefly Scot* : having a coarse manner 2 : LUSTFUL, LECHEROUS

[2]**randy** *n, pl* **rand·ies** (1762) *chiefly Scot* : a scolding or dissolute woman

rang *past of* RING

[1]**range** \'rānj\ *n, often attrib* [ME, row of persons, fr. MF *renge,* fr. OF *rengier* to range] (14c) 1 a (1) : a series of things in a line : ROW (2) : a series of mountains (3) : one of the north-south rows of townships in a U.S. public-land survey that are numbered east and west from the principal meridian of the survey b : an aggregate of individuals in one order c : a direction line 2 : a cooking stove that has an oven and a flat top with burners or heating elements 3 a : a place that may be ranged over b : an open region over which animals (as livestock) may roam and feed c : the region throughout which a kind of organism or ecological community naturally lives or occurs 4 : the act of ranging about 5 a (1) : the horizontal distance to which a projectile can be propelled (2) : the horizontal distance between a weapon and target b : the maximum distance a vehicle or craft can travel without refueling c (1) : a place where shooting is practiced (2) : DRIVING RANGE 6 a : the space or extent included, covered, or used : SCOPE b : the extent of pitch covered by a melody or lying within the capacity of a voice or instrument 7 a : a sequence, series, or scale between limits ⟨a wide ~ of patterns⟩ b : the limits of a series : the distance or extent between possible extremes c : the difference between the least and greatest values of an attribute or of the variable of a frequency distribution 8 a : the set of values a function may take on b : the class of admissible values of a variable 9 : LINE 11

syn RANGE, GAMUT, COMPASS, SWEEP, SCOPE, ORBIT mean the extent that lies within the powers of something (as to cover or control). RANGE is a general term indicating the extent of one's perception or the extent of powers, capacities, or possibilities ⟨the entire *range* of human experience⟩. GAMUT suggests a graduated series running from one possible extreme to another ⟨a performance that ran the *gamut* of emotions⟩. COMPASS implies a sometimes limited extent of perception, knowledge, or activity ⟨your concerns lie beyond the narrow *compass* of this study⟩. SWEEP suggests extent, often circular or arc-shaped, of motion or activity ⟨the book covers the entire *sweep* of criminal activity⟩. SCOPE is applicable to an area of activity, predetermined and limited, but somewhat flexible ⟨as time went on, the *scope* of the investigation widened⟩. ORBIT suggests an often circumscribed range of activity or influence within which forces work toward accommodation ⟨within that restricted *orbit* they tried to effect social change⟩.

[2]**range** *vb* **ranged; rang·ing** [ME, fr. MF *ranger,* fr. OF *rengier,* fr. *renc, reng* line, place, row — more at RANK] *vt* (14c) 1 a : to set in a row or in the proper order b : to place among others in a position or situation c : to assign to a category : CLASSIFY 2 a : to rove over or through b : to sail or pass along 3 : to arrange (an anchor cable) on deck 4 : to graze (livestock) on a range 5 : to determine or give the elevation necessary for (a gun) to propel a projectile to a given distance ~ *vi* 1 a : to roam at large or freely b : to move over an area so as to explore it 2 : to take a position 3 a : to correspond in direction or line : ALIGN b : to extend in a particular direction 4 : to have range 5 : to change or differ within limits 6 *of an organism* : to live or occur in or be native to a region 7 : to obtain the range of an object by instrument (as radar or laser)

range finder *n* (1872) 1 : an instrument used in gunnery to determine the distance of a target 2 : a surveying instrument (as a transit) for determining quickly the distances, bearings, and elevations of distant objects 3 : a usu. built-in adjustable optical device for focusing a camera that automatically indicates the correct focus (as when two parts of a split image are brought together)

range·land \'rānj-,land\ *n* (1935) : land used or suitable for range

rang·er \'rān-jər\ *n* (14c) 1 a : the keeper of a British royal park or forest b : FOREST RANGER 2 : one that ranges 3 a : one of a body of organized armed men who range over a region esp. to enforce the law b : a soldier specially trained in close-range fighting and in raiding tactics

rangy \'rān-jē\ *adj* **rang·i·er; -est** (1868) 1 : able to range for considerable distances 2 a : long-limbed and long-bodied ⟨~ cattle⟩ b : being tall and slender 3 : having room for ranging 4 : having great scope — **rang·i·ness** *n*

ra·ni *or* **ra·nee** \rä-'nē, 'rä-,nē\ *n* [Hindi *rānī,* fr. Skt *rājñī,* fem. of *rājan* king — more at ROYAL] (1673) : a Hindu queen : a rajah's wife

ra·nid \'ra-nəd, 'rā-\ *n* [ultim. fr. L *rana* frog] (ca. 1934) : any of a large family (Ranidae) of frogs distinguished by slightly dilated transverse sacral processes

[1]**rank** \'raŋk\ *adj* [ME, fr. OE *ranc* overbearing, strong; akin to ON *rakkr* erect and perh. to OE *riht* right — more at RIGHT] (13c) 1 : luxuriantly or excessively vigorous in growth 2 : offensively gross or coarse : FOUL 3 *obs* : grown too large 4 a : shockingly conspicuous ⟨must lecture him on his ~ disloyalty —David Walden⟩ b : OUTRIGHT — used as an intensive ⟨~ beginners⟩ 5 *archaic* : LUSTFUL, RUTTISH 6 : offensive in odor or flavor; *esp* : RANCID 7 : PUTRID, FESTERING 8 : high in amount or degree : FRAUGHT *syn* see MALODOROUS, FLAGRANT — **rank·ly** *adv* — **rank·ness** *n*

[2]**rank** *n* [ME, fr. MF *renc, reng,* of Gmc origin; akin to OHG *hring* ring — more at RING] (14c) 1 a : ROW, SERIES b : a row of people c (1) : a line of soldiers ranged side by side in close order (2) *pl* : ARMED FORCES (3) *pl* : the body of enlisted personnel d : any of the rows of squares that extend across a chessboard perpendicular to the files e *Brit* : STAND 6 2 a : relative standing or position b : a degree or position of dignity, eminence, or excellence : DISTINCTION ⟨soon took ~ as a leading attorney —J. D. Hicks⟩ c : high social position ⟨the privileges of ~⟩ d : a grade of official standing in a hierarchy 3 : an orderly arrangement : FORMATION 4 : an aggregate of individuals classed together — usu. used in pl. 5 : the order according to some statistical characteristic (as the score on a test) 6 : any of a series of classes of coal based on increasing alteration of the parent vegetable matter, increasing carbon content, and increasing fuel value 7 : the number of linearly independent rows or columns in a matrix

[3]**rank** *vt* (1573) 1 : to arrange in lines or in a regular formation 2 : to determine the relative position of : RATE 3 : to take precedence of ~ *vi* 1 : to form or move in ranks 2 : to take or have a position in relation to others

rank and file *n* (1598) 1 : the enlisted personnel of an armed force 2 : the individuals who constitute the body of an organization, society, or nation as distinguished from the leaders — **rank–and–file** \,raŋk-ᵊn-'fīl\ *adj* — **rank and fil·er** \-'fī-lər\ *n*

rank correlation *n* (1907) : a measure of correlation depending on rank

rank·er \'raŋ-kər\ *n* (1878) : one who serves or has served in the ranks; *esp* : a commissioned officer promoted from the ranks

Ran·kine \'raŋ-kən\ *adj* [William J. M. *Rankine* †1872 Scot. engineer & physicist] (ca. 1926) : being, according to, or relating to an absolute temperature scale on which the unit of measurement equals a Fahrenheit degree and on which the freezing point of water is 491.67° and the boiling point 671.67°

rank·ing *adj* (1862) : having a high position: as a : FOREMOST ⟨~ poet⟩ b : being next to the chairman in seniority ⟨~ committee member⟩

ran·kle \'raŋ-kəl\ *vb* **ran·kled; ran·kling** \-k(ə-)liŋ\ [ME *ranclen* to fester, fr. MF *rancler,* fr. OF *draoncler, raoncler,* fr. *draoncle, raoncle* festering sore, fr. ML *dracunculus,* fr. L, dim. of *draco* serpent — more at DRAGON] *vi* (1606) 1 : to cause anger, irritation, or deep bitterness 2 : to feel anger and irritation ~ *vt* : to cause irritation or bitterness in

ran·sack \'ran-,sak, (,)ran-'\ *vt* [ME *ransaken,* fr. ON *rannsaka,* fr. *rann* house + *-saka* (akin to OE *sēcan* to seek) — more at SEEK] (13c) 1 a : to search thoroughly b : to examine closely and carefully 2 : to search through to commit robbery : PLUNDER — **ran·sack·er** *n*

[1]**ran·som** \'ran(t)-səm\ *n* [ME *ransoun,* fr. OF *rançon,* fr. L *redemption-, redemptio* — more at REDEMPTION] (13c) 1 : a consideration paid or demanded for the release of someone or something from captivity 2 : the act of ransoming

[2]**ransom** *vt* (14c) 1 : to deliver esp. from sin or its penalty 2 : to free from captivity or punishment by paying a price *syn* see RESCUE — **ran·som·er** *n*

[1]**rant** \'rant\ *vb* [obs. D *ranten, randen*] *vi* (1602) 1 : to talk in a noisy, excited, or declamatory manner 2 : to scold vehemently ~ *vt* : to utter in a bombastic declamatory fashion — **rant·er** *n* — **rant·ing·ly** \'ran-tiŋ-lē\ *adv*

[2]**rant** *n* (1649) 1 a : a bombastic extravagant speech b : bombastic extravagant language 2 *dial Brit* : a rousing good time

ran·u·la \'ran-yə-lə\ *n* [NL, fr. L, swelling on the tongue of cattle, fr. dim. of *rana* frog] (15c) : a cyst formed under the tongue by obstruction of a gland duct

ra·nun·cu·lus \rə-'nəŋ-kyə-ləs\ *n, pl* **-lus·es** *or* **-li** \-,lī, -,lē\ [NL, fr. L, fr. dim. of *rana* frog] (1543) : BUTTERCUP

[1]**rap** \'rap\ *n* [ME *rappe*] (14c) 1 : a sharp blow or knock 2 a : a sharp rebuke or criticism b : a negative and often undeserved reputation or charge — usu. used with *bum* or *bad* ⟨given a bum ~ by the press⟩ 3 a : the responsibility for or adverse consequences of an action ⟨refused to take the ~⟩ b : a criminal charge c : a prison sentence

[2]**rap** *vb* **rapped; rap·ping** *vt* (14c) 1 : to strike with a sharp blow 2 : to utter suddenly and forcibly 3 : to cause to be or come by raps ⟨~ the meeting to order⟩ 4 : to criticize sharply ~ *vi* 1 : to strike a quick sharp blow 2 : to make a short sharp sound

[3]**rap** *vt* **rapped** *also* **rapt** \'rapt\; **rap·ping** [back-formation fr. *rapt*] (1528) 1 : to snatch away or upward 2 : ENRAPTURE

[4]**rap** *n* [perh. fr. [1]*rap*] (1834) : a minimum amount or degree (as of care or consideration) : the least bit ⟨doesn't care a ~⟩

[5]**rap** *vi* **rapped; rap·ping** [perh. fr. [1]*rap*] (1929) 1 : to talk freely and frankly 2 : to perform rap music

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